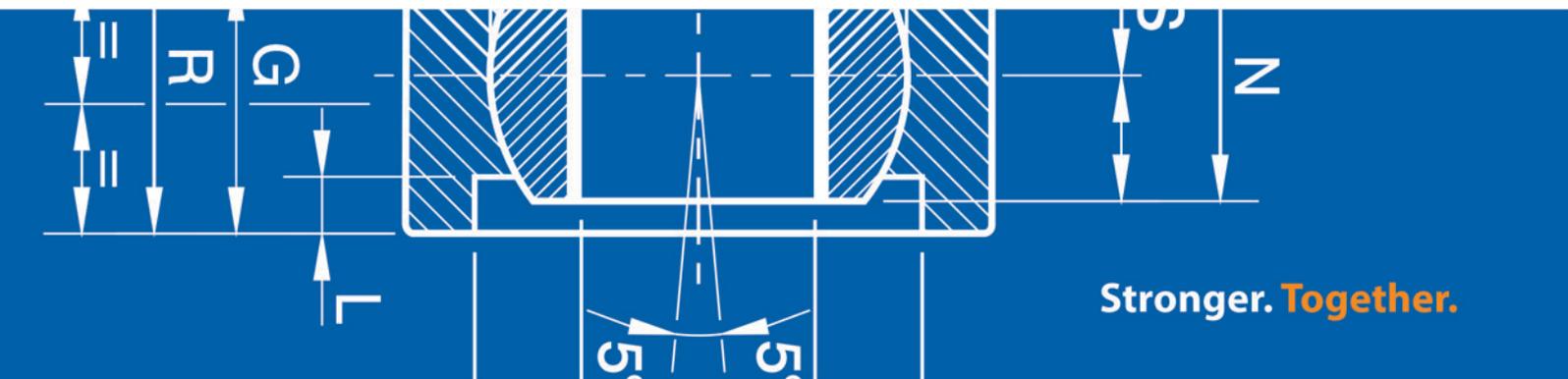
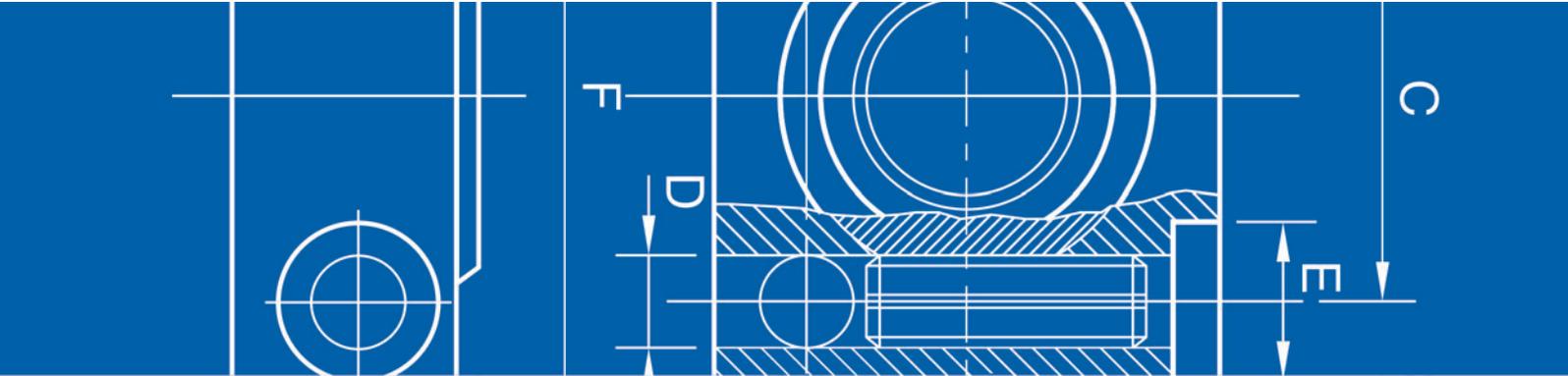


PRODUCTS AND SOLUTIONS GUIDE



Stronger. Together.

PUSHING BOUNDARIES TO CO-CREATE A HIGHER QUALITY OF LIFE

GGB® helps create a world of motion with minimal frictional loss through plain bearing and surface engineering technologies. With R&D, testing and global production facilities, GGB partners with customers worldwide on customized tribological design solutions that are efficient and environmentally sustainable.

GGB's engineers bring their expertise and passion for tribology to a wide range of industries, including automotive, aerospace and industrial manufacturing. Our products are used in thousands of critical applications every day worldwide. It is always our goal to provide superior, high-quality solutions for our customers' needs, no matter where those demands take our products. From space vehicles to the bottom of the ocean and virtually everything in between; we offer the industry's most extensive range of high performance, maintenance-free bearing solutions.

Partner with GGB in the early stage of a design to expand beyond traditional surface engineering solutions.
For more information, visit us at www.ggbearings.com.

THE GGB ADVANTAGE



MAINTENANCE-FREE

GGB bearings are self-lubricating, making them ideal for applications requiring long bearing life without continuous maintenance, as well as under operating conditions with inadequate or no lubrication.



LOW FRICTION, HIGH WEAR RESISTANCE

Low coefficients of friction eliminate the need for lubrication, while providing smooth operation, reducing wear and extending service life. Low friction also eliminates the effects of stick-slip or "stiction" during start up.



ENVIRONMENTAL

Greaseless, lead-free GGB bearings comply with increasingly stringent environmental regulations such as the RoHS and WEEE directives restricting the use of hazardous substances in certain types of electrical and electronic equipment.



LOWER SYSTEM COST

A slim, compact, one-piece design offers significant space and weight reductions to simplify installation, lower system costs and minimize potential damage during installation.



CUSTOMER SUPPORT

GGB's flexible production platform and extensive supply network assure quick turnaround and timely deliveries. In addition, we offer technical, application and design support, so customers can identify the ideal bearing solution for even the most challenging applications.

METAL-POLYMER BEARINGS

The excellent low friction and high wear resistance performance of GGB metal-polymer bearings make them ideal for hundreds of applications in numerous and diverse industries. Our bearings allow downsizing of the system to reduce weight for environmental reasons or space restrictions. All Metal-Polymer bearings are ROHS compliant with the exception of DU and DU-B.

Metal-Polymer bearings with PTFE Matrix (Dispersion)

- Very low friction coefficients
- Thin-running-in layer of PTFE
- PTFE and bronze liner system for optimum friction and wear performance
- Self-lubricating, dry running

Metal-Polymer bearings with Thermoplastic Matrix (Tape)

- Thick, robust polymer overlay
- In most cases, optimized for grease or oil lubrication
- Higher wear resistance and shock loading

PRODUCT	ADVANTAGES	INFO	PRODUCT	ADVANTAGES	INFO
DU® 	Original iconic all purpose metal-polymer product that offers exceptional wear resistance with low friction over a wide range of dry and lubricated running conditions.		DX® 	DX bearing material for marginally lubricated applications. Optimum performance under relatively high loads and low speeds.	
DU-B 	Same advantages as DU, but bronze back offers additional corrosion resistance in humid/saline environments.		DX®10 	DX10 is perfect for heavy duty and harsh environments and offers excellent abrasive and erosion resistance. Good fatigue strength.	
DP4® 	Lead-free all-purpose DP4 material offering low friction and good wear resistance in both dry and lubricated applications. Suitable for linear, oscillating and rotating movements.		HI-EX® 	Marginally lubricated bearing material with ultimate robustness and wear performance under highly loaded, thin film conditions. Available with non-indented overlay for hydrodynamic applications.	
DP4-B 	Same advantages as DP4, but bronze back offers additional corrosion resistance in humid/saline environments.		DTS10® 	DTS10 offers the ultimate performance for oil lubricated application, offering low friction and the highest level of chemical resistance, fatigue strength and wear performance. Also designed to resist cavitation and flow erosion, and good behavior in dry start-up conditions. A material that is designed to be machined after assembly for tight tolerances.	
DP10 	DP10 offers very good performance in lubricated applications, particularly in marginally lubricated applications.		DS 	DS is similar to DX but with lower friction and dry running capability. It particularly excels in humid environments with low amplitude oscillating movements, designed to minimize fretting corrosion damage of the shaft.	
DP11 	DP11 is particularly suited for dry applications with high frequency and low amplitude oscillating movements.				
DP31 	DP31 is ideal for oil lubricated applications as it offers superior flow erosion and cavitation resistance and fatigue strength.				

ENGINEERED PLASTICS BEARINGS

GGB's Engineered Plastics bearings are made from thermoplastic materials and processed by injection molding. This production method enables us to produce complex geometries. In addition to their high shock-loading resistance and noise-dampening properties, they are environmentally friendly and help minimize the need for maintenance. All Engineered Plastics Bearings are ROHS compliant.

PRODUCT	ADVANTAGES	MORE INFORMATION
EP® 	General purpose EP material provides good bearing performance in dry as well as lubricated or marginally lubricated working conditions. Good choice for medium working conditions compared to other Engineered Plastics materials.	
EP®12 	EP12 is a good choice for water lubricated applications, but also operates well in dry, marginally lubricated and lubricated conditions. Good choice for low temperature conditions compared to other Engineered Plastics materials.	
EP®15 	EP15 are UV-resistant bearings. The material is resistant to low temperature applications. They are lightweight with a low coefficient of friction and abrasion resistance.	
EP®22 	EP22 bearings provide a good price/performance ratio . Good performance in low load applications, also a good choice for water lubricated applications.	
EP®30 	EP30 is suitable for elasto hydrodynamic applications and is good in dry, lubricated or marginally lubricated conditions.	
EP®43 	EP43 provides a good price performance ratio for high temperature applications and is dimensionally stable. Good chemical and moisture resistance.	
EP®44 	EP44 provides a good price performance ratio. It is especially good with grease, oil, or water lubrication.	
EP®63 	EP63 is suitable for very high temperature applications and provides high mechanical strength.	
EP®64 	EP64 offers an excellent flow erosion and cavitation resistance and offers a very high mechanical performance.	
KA-Glacetel 	KA-Glacetel washers provide good bearing performance in light duty working conditions and a good price and weight performance ratio.	
Multilube 	Multilube offers a good price performance ratio and operates in dry, marginally lubricated and lubricated applications.	

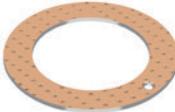
FIBER REINFORCED COMPOSITE (FRC) BEARINGS

Fiber Reinforced Composite bearings offer ultimate robustness and excellent self-lubrication capability to ensure durability and efficient performance under the most aggressive of environments due to their high strength, and resistance to shock loads, corrosion, and chemical attack. Ideal where use in application where oil or grease is not tolerated or desired for environmental reasons. GGB FRC bearings consist of a filament-wound, fiberglass-impregnated, epoxy backing with a variety of low-friction wear-resistant bearing linings. All FRC bearings are ROHS compliant.

PRODUCT	ADVANTAGES	MORE INFORMATION
GAR-MAX® 	GAR-MAX is known for its high load capacity and excellent shock and misalignment resistance.	
GAR-FIL 	GAR-FIL provides a machinable bearing surface for more precise assembly tolerances and offers a high rotational speed capacity. Excellent contamination resistance.	
HSG 	HSG offers twice as much high load capacity and excellent shock and misalignment resistance.	
MLG 	MLG provides high load capacity, suitable for lighter duty applications.	
HPM 	HPM is designed for hydropower applications, dimensionally stable with very low water absorption and low swelling.	
HPMB® 	HPMB provides machinable inner and outer diameters for application precision, circularity and cylindricity tolerances.	
HPF 	HPF is designed for hydropower applications and provides a machinable bearing surface.	
GGB-Megalife®XT 	GGB-Megalife XT thrust washers offer excellent contamination resistance.	
SBC with GAR-MAX®/HSG 	Sealed GAR-MAX or HSG bearing to exclude contamination, offering extended service life.	
Multifil 	Multifil is a sliding bearing material which can easily be bonded to any clean, rigid substance.	

METAL & BIMETAL BEARINGS

For the demanding specifications of working within severe working conditions with minimal or no maintenance, our broad range of monometal, sinterbronze and bimetal bearings improve reliability and durability while lowering operating costs. Designed for lubricated conditions, these bearings are suitable for use in a wide range of demanding applications. All Metal & Bimetal bearings are ROHS compliant with the exception of SY and SP.

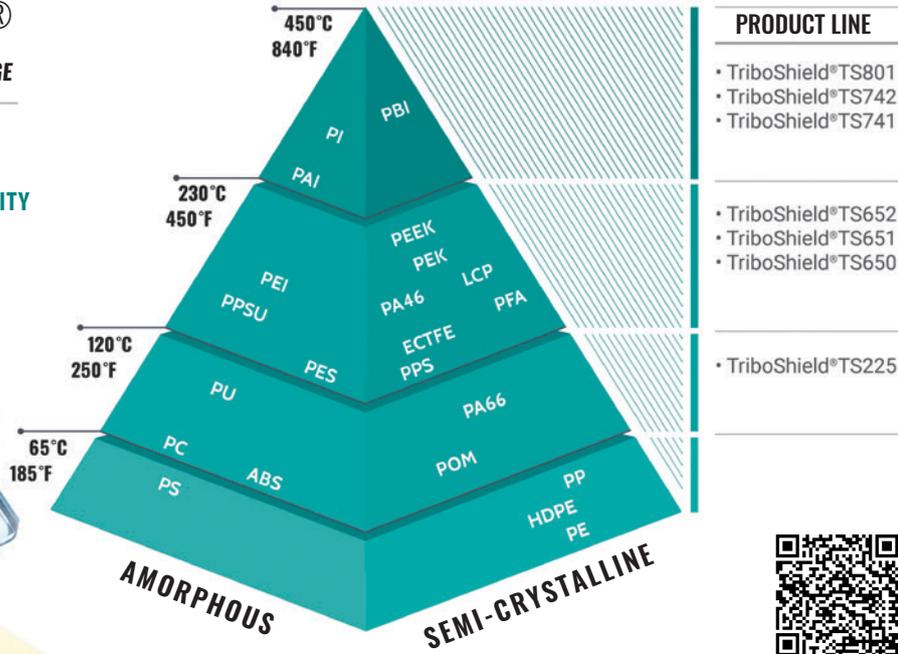
PRODUCT	ADVANTAGES	MORE INFORMATION
GGB-DB® 	GGB-DB cast bronze bearings are suitable for heavy duty applications. Available with PTFE or graphite inserts.	
GGB-SHB® 	GGB-SHB cast hardened steel bearings are available with plain or grooved sliding layer. Suitable for low rotation speed with high specific pressure.	
GGB-BP25 	Maintenance-free GGB-BP25 oil impregnated sintered bronze bearings offer optimum performance in low temperature applications with relatively light loads and high speeds.	
GGB-FP20 	Maintenance-free GGB-FP20 oil impregnated sintered iron bearings are available in complex shapes for general industrial applications.	
GGB-SO16 	Maintenance-free GGB-SO16 oil impregnated sintered iron rods offer higher performance compared to GGB-FP20 under high loads and low speeds.	
AuGlide® 	Lead-free bimetal AuGlide bearings are machinable and capable of supporting high specific loads and high temperatures.	
GGB-CBM® 	Thin-walled bimetal GGB-CBM bearings are maintenance-free and offer high load capacity and are suited for a broad temperature range.	
GGB-CSM® 	Thick-walled monometal GGB-CSM bearings are maintenance-free and offer a high load capacity and a temperature range of up to 600°C.	
SY 	Bimetal SY (SAE standard 792) bearings are particularly suitable for high specific loads with oscillating motion and low frequency for rough operating conditions.	
SP 	Bimetal SP (SAE standard 794) bearings are suitable for oil and grease lubrication.	

POLYMER COATINGS

The range of TriboShield coatings includes seven standard formulations that cover the full spectrum of mechanical, thermal and chemical capabilities offered by today's Polymer materials. Triboshield coatings particularly excel when used as the countersurface in conjunction with other GGB bearings to offer exceptional low friction and wear performance.

TriboShield® STANDARD COATINGS RANGE

- ↑ PERFORMANCE
- ↑ PROCESSING COMPLEXITY
- ↑ COST



EXPERIENCE THE TRIBOSHIELD ADVANTAGE



IN-HOUSE PAINT MANUFACTURE
The ability to formulate and tailor polymer coatings to control surface behavior.



CHEMICAL AND CORROSION PROTECTION
Features exceptional chemical and corrosion protection, offering a barrier of inert material between surfaces to extend longevity.



DESIGN SIMPLIFICATION
Allows for more simplistic design that employs fewer parts and easier assembly in complex-shaped surfaces that traditional bearings cannot access.



SELF-LUBRICATION
Incorporate solid lubricants to deliver self-lubricity that can help reduce and sometimes eliminate the need for additional lubrication in machine parts.



MOST METALLIC SUBSTRATES
Works with steel, stainless steel, aluminum, titanium, and magnesium (and can be considered for polymeric and composite substrates, too).



HARD CHROME REPLACEMENT
With toxicity levels, high costs, and bans likely coming soon, chemical hard chrome plating is becoming a thing of the past - making polymer coatings the environmentally conscious way of the future.

Partner with GGB in the early stage of a design to expand beyond traditional surface engineering solutions.

For more information, visit us at www.ggbearings.com.

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<https://www.ggbearings.com/en/brochures>

GGB®, DP4®, DU®, DX®, DX*10, HI-EX®, DTS10®, EP®, EP*12, EP*15, EP*22, EP*30, EP*43, EP*44, EP*63, EP*64, GGB-DB®, GAR-MAX®, HPMB®, GGB-MEGALIFE®XT, Auglide®, TriboShield®, GGB-SHB®, GGB-CBM® and GGB-CSM® are registered trademarks of GGB U.S. Holdco LLC.
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